

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Wilsons and Jordan Creeks

Water Body Segment at a Glance:

County: Christian, Greene
Nearby Cities: Springfield
Length of impaired segments: Wilsons Creek – 18 miles
Jordan Creek – 3.8 miles
Pollutant: Unknown
Sources:
 Wilsons Creek – 2375: Multiple point sources and urban nonpoint sources
 Jordan Creek – 3374: Urban nonpoint sources



State map showing location of watershed

TMDL Scheduled for development: Established by EPA 2011

Description of the Problem

Designated Beneficial uses of Wilsons and Jordan Creeks

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation – Category B

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- The impairment of Wilsons and Jordan creeks is based on exceedance of the general criteria contained in Missouri's Water Quality Standards (WQS)10 CSR 20-7.030 (3)(D) and (G). These criteria state:
 - Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.
 - Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

Background information and water quality data

Wilsons Creek is one of the largest tributary streams in the James River system and it drains much of the city of Springfield. It flows west and south of the city, passes through the Wilsons Creek National Battlefield [Civil War], and joins the James River about 8 miles south of the city. Wilsons Creek is on

the Missouri 2008 303(d) List of impaired waters for unknown pollutants. Direct toxicity testing of waters by the National Park Service in 1989 found toxicity in both Wilsons Creek and South Creek (a tributary to Wilsons). According to sampling done by the Missouri Department of Natural Resources in 1997 and 2007 (Table 1), by biologists at City Utilities of Springfield (1984-1992 invertebrate data, not shown) and by the City of Springfield (Table 2), evidence of toxicity includes very low diversity of aquatic invertebrate animals and fish.

Jordan Creek joins Fassnacht Creek to form Wilsons Creek and is totally contained within Springfield (see map page 3). Like Wilsons Creek, it is on the impaired waters list for unknown pollutants. Historically, Jordan Creek has been the most polluted water body in the Springfield area. It has been confined into cement channels that run underground throughout much of its length. As part of the city's Municipal Separate Sanitary Storm System Permit, or MS4, parts of Jordan Creek have been "daylighted", or uncovered and restored to a natural looking stream. This area is part of Jordan Valley Park, a Springfield revitalization project.

Text continued after map.

Table 1. Aquatic Invertebrate Monitoring by Missouri Department of Natural Resources 1997 and 2007.

Location	Site	Score	Date
Jordan Cr. near Bennett St.	5	6	Spring 2007
Wilson's Cr. 3 mi. ab. WWTP	3	8	Spring 2007
Wilson's Cr. 3 mi. bl.. WWTP	2	6	Spring 1997
Wilson's Cr. 3 mi. bl.. WWTP	2	10	Fall 1997
Wilson's Cr. 5.2 mi. bl. WWTP	1	10	Spring 1997
Wilson's Cr. 5.2 mi. bl. WWTP	1	10	Fall 1997

Note: Scores of less than 16 are considered to reflect impaired macro-invertebrate communities.

Table 2. Fish Sampling, Index of Biotic Integrity (IBI) Scores (City of Springfield)

Location	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Spring 2009
Wilsons Cr. near Scenic Ave. (Site 4)	66.31	65.58	64.2	63.6	74.3	61.2	80.5	78.2
Jordan Cr. near Bennett St. (Site 5)	63.34	65.26	63.8	48	70.8	67.3		

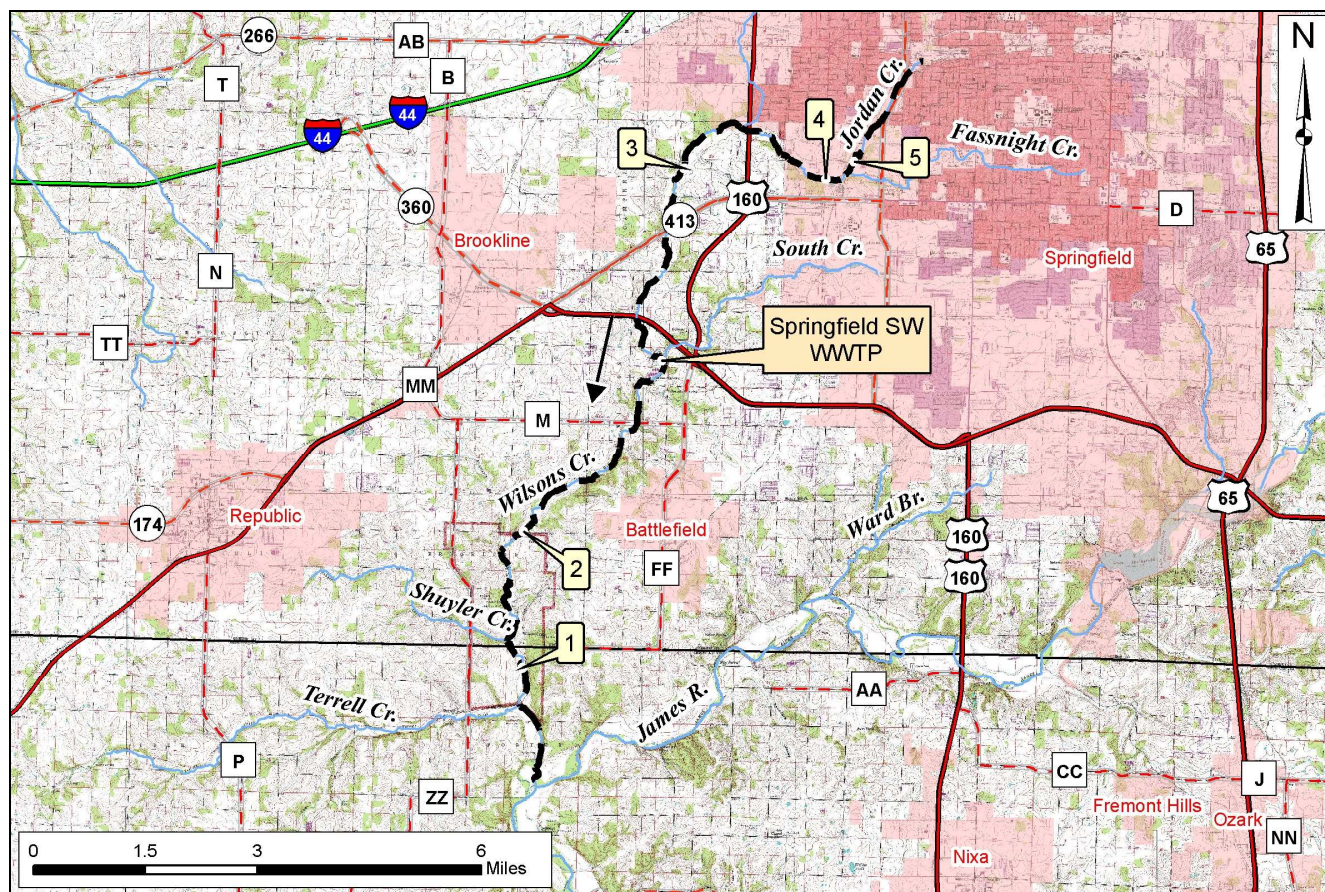
Note: The IBI Scores are as follows:

80-100 = minimally impaired

60-80 = moderately impaired (grey shading)

Less than 60 = severely impaired (dark grey shading)

Wilsons and Jordan Creeks near Springfield in Greene County, Mo., with Sampling Sites



--- Impaired Segment → Direction of Flow

Site Index for Map

- 1 – Wilsons Cr. 5.2 mi. below WWTP
- 2 – Wilsons Cr. 3 mi. below WWTP
- 3 – Wilsons Cr. 3 mi. above WWTP
- 4 – Wilsons Cr. near Scenic Ave.
- 5 – Jordan Cr. near Bennett St.

WWTP = Wastewater Treatment Plant

In 2000 (published in 2003), the U.S. Geological Survey conducted a study of water quality of Wilsons Creek during normal and storm water flow conditions. This study analyzed waters for such toxicants as heavy metals, pesticides and other organic chemicals. It revealed the presence of many potentially toxic chemicals. However, none of these chemicals were found in concentrations large enough to exceed state WQS for protecting aquatic life. Meanwhile, the MS4 for the City of Springfield was issued July 2002. In addition, the U.S. Environmental Protection Agency conducted monitoring in 2009 in preparation for developing the TMDL. This monitoring identified several compounds with

known toxicity to aquatic life. Sources of these contaminants are associated with urban areas and will be mitigated if storm water is controlled.

Since approximately 33 percent of the Wilsons Creek watershed (which includes Jordan Creek) is classified as urban and a significant portion of that area is adjacent to the impaired segments, urban storm water runoff is considered a primary cause of the impairment of unknown pollutants. The TMDL for Wilsons and Jordan creeks targets the reduction of storm water runoff as a surrogate for pollutants causing the aquatic life beneficial use impairment. This is supported by scientific literature and site specific studies.

The Wilsons and Jordan creeks TMDLs were established by the U.S. Environmental Protection Agency, or EPA, January 28, 2011.

For more information call or write:

Missouri Department of Natural Resources, Water Protection Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or 573-751-1300 office

573-522-9920 fax

Program Home Page: dnr.mo.gov/env/wpp/index.htm